

AMENDMENTS TO THE CLAIMS

1-31. (Cancelled)

32. (Withdrawn - currently amended) A method of perforating a membrane comprising:

bringing a membrane-denaturing substance into contact with or close proximity to at least a site of said membrane, ~~said substance inducing a membrane-denaturing reaction by a stimulus~~
membrane being a cell membrane, intracellular membrane, or artificial lipid membrane;

providing a stimulus to said substance so as to denature said membrane; and

perforating said membrane with a membrane-destroying member where perforation of the membrane recovers to the state prior to perforation;

wherein said substance is a photosensitizer or photocatalyst and said stimulus is light, and
wherein said light is carried through said membrane-destroying member from a light source.

33. (Cancelled)

34. (Currently amended) The method according to claim 32, wherein ~~said stimulus is selected from the group comprising electromagnetic waves including light, particle rays including radiation, heat, cooling, electricity, magnetism, oscillations including ultrasonic waves, physical contact, chemical substances, living beings including cells, viruses, and any combinations thereof~~ light includes ultraviolet light.

35-36. (Cancelled)

37. (Withdrawn) The method according to claim 32, wherein said membrane destroying member constitutes a supporting member for supporting the membrane-denaturing substance and a stimulus carrying member for carrying the stimulus.

38. (Withdrawn - currently amended) The method according to claim 32, wherein said membrane destroying member is a capillary.

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39. (Withdrawn - currently amended) The method according to claim 37, wherein said membrane destroying member is a capillary.

40. (Currently amended) The method according to claim 38, wherein ~~said stimulus is light~~, said light transmits through the side wall of said capillary as a light guide, and said light is applied to said membrane-denaturing substance from the tip of said capillary.

41. (Currently amended) The method according to claim 39, wherein ~~said stimulus is light~~, said light transmits through the side wall of said capillary as a light guide, and said light is applied to said membrane-denaturing substance from the tip of said capillary.

42. (Withdrawn - currently amended) The method according to claim 32, wherein said membrane destroying member is an intracellular sensor.

43. (Withdrawn - currently amended) The method according to claim 37, wherein said membrane destroying member is an intracellular sensor.

44. (Withdrawn - currently amended) A method of perforating a membrane comprising:

bringing a membrane-denaturing substance into contact with or close proximity to at least a site of said membrane, said ~~substance inducing a membrane-denaturing reaction by a stimulus~~
membrane being a cell membrane, intracellular membrane, or artificial lipid membrane;

said bringing done by a supporting member for supporting said substance; and

providing said stimulus to said substance so as to denature and perforate said membrane
where perforation of the membrane recovers to the state prior to perforation;

wherein said substance is a photosensitizer or photocatalyst and said stimulus is light, and
wherein said light is carried through said supporting member from a light source.

45. (Cancelled)

46. (Currently amended) The method according to claim 44, wherein said ~~stimulus is selected from the group comprising electromagnetic waves including light, particle rays including radiation, heat, cooling, electricity, magnetism, oscillations including ultrasonic waves, physical contact, chemical substances, living beings including cells, viruses, and any combinations thereof~~ light includes ultraviolet light.

47-48. (Cancelled)

49. (Withdrawn) The method according to claim 44, wherein said supporting member constitutes a membrane destroying member for perforating the membrane and a stimulus carrying member for carrying the stimulus.

50. (Withdrawn - currently amended) The method according to claim 44, wherein said supporting member is a capillary.

51. (Withdrawn - currently amended) The method according to claim 49, wherein said supporting member is a capillary.

52. (Currently amended) The method according to claim 50, wherein said ~~stimulus is light, said light transmits through the side wall of said capillary as a light guide, and said light is applied to said membrane-denaturing substance from the tip of said capillary.~~

53. (Currently amended) The method according to claim 51, wherein said ~~stimulus is light, said light transmits through the side wall of said capillary as a light guide, and said light is applied to said membrane-denaturing substance from the tip of said capillary.~~

54. (Withdrawn - currently amended) The method according to claim 44, wherein said supporting member is an intracellular sensor.

55. (Currently amended) The method according to claim 49, wherein said supporting member is an intracellular sensor.

56. (Withdrawn - currently amended) A method of perforating a membrane comprising:

bringing a membrane-denaturing substance into contact with or close proximity to at least a site of said membrane, ~~said substance inducing a membrane-denaturing reaction by a stimulus~~ membrane being a cell membrane, intracellular membrane, or artificial lipid membrane; and

providing said stimulus to said substance so as to denature and perforate said membrane where perforation of the membrane recovers to the state prior to perforation;

wherein said substance is a photosensitizer or photocatalyst and said stimulus is light, and wherein said light is carried through a stimulus-carrying member from a light source, and said stimulus-carrying member locally introduces said stimulus to said site ~~of said substance.~~

57. (Cancelled)

58. (Currently amended) The method according to claim 56, wherein ~~said stimulus is selected from the group comprising electromagnetic waves including light, particle rays including radiation, heat, cooling, electricity, magnetism, oscillations including ultrasonic waves, physical contact, chemical substances, living beings including cells, viruses, and any combinations thereof~~ light includes ultraviolet light.

59-60. (Cancelled)

61. (Withdrawn) The method according to claim 56, wherein said stimulus carrying member constitutes a supporting member for supporting the membrane-denaturing substance and a membrane destroying member for perforating the membrane.

62. (Withdrawn - currently amended) The method according to claim 56, wherein said stimulus-carrying member is a capillary.

63. (Withdrawn - currently amended) The method according to claim 61, wherein said stimulus-carrying member is a capillary.

64. (Currently amended) The method according to claim 62, wherein ~~said stimulus is light~~, said light transmits through the side wall of said capillary as a light guide, and said light is applied to said membrane-denaturing substance from the tip of said capillary.

65. (Currently amended) The method according to claim ~~[[32]]~~ 63, wherein ~~said stimulus is light~~, said light transmits through the side wall of said capillary as a light guide, and said light is applied to said membrane-denaturing substance from the tip of said capillary.

66. (Currently amended) The method according to claim 56, ~~wherein said stimulus is light~~, and wherein at least one optical fiber extends ~~[[in]]~~ along the length of said capillary, ~~said fiber is provided inside and/or outside of the capillary~~, wherein a distal end of said fiber extends to the tip of said capillary so as to apply said light to ~~[[the]]~~ said substance from the end of said fiber.

67. (Withdrawn - currently amended) The method according to claim 56, wherein said stimulus-carrying member is an intracellular sensor.

68. (Withdrawn - currently amended) The method according to claim 61, wherein said stimulus-carrying member is an intracellular sensor.

69. (Withdrawn - currently amended) A microinjection method comprising:
perforating a membrane using the method as claimed in claim 32; and injecting a desired substance ~~[[into]]~~ inside the membrane.

70. (Withdrawn - currently amended) The microinjection method according to claim ~~[[38]]~~ 69, wherein said substance to be injected ~~[[into]]~~ inside said membrane contains a photosensitizer or photocatalyst as a membrane denaturing substance that induces a membrane-denaturing reaction by light as a stimulus.

71-72. (Cancelled)

73. (Withdrawn - currently amended) The microinjection method according to claim [[38]] 69, the method comprising filling the capillary with ~~the~~ said substance to be injected, penetrating the tip of the capillary into the membrane, and injecting said substance ~~being injected~~ into the membrane through the capillary.

74. (Withdrawn - currently amended) A microinjection method comprising:
perforating a membrane using the method as claimed in claim 44; and
injecting a desired substance [[into]] inside the membrane.

75. (Withdrawn - currently amended) The microinjection method according to claim [[43]] 74, wherein said substance to be injected into said membrane contains a photosensitizer or photocatalyst as a membrane denaturing substance that induces a membrane-denaturing reaction by light as a stimulus.

76-77. (Cancelled)

78. (Withdrawn - currently amended) The microinjection method according to claim [[43]] 74, wherein said supporting member is a capillary, said [[the]] method comprising filling the capillary with the substance to be injected, penetrating the tip of the capillary into the membrane, and injecting said substance ~~being injected~~ into the membrane through the capillary.

79. (Withdrawn - currently amended) A microinjection method comprising:
perforating a membrane using the method as claimed in claim 56; and
injecting a desired substance [[into]] inside the membrane.

80. (Withdrawn - currently amended) The microinjection method according to claim [[48]] 79, wherein said substance to be injected into said membrane contains a photosensitizer or photocatalyst as a membrane denaturing substance that induces a membrane-denaturing reaction by light as a stimulus.

81-82. (Cancelled)

83. (Withdrawn - currently amended) The microinjection method according to claim [[48]] 79, the method comprising filling the capillary with the substance to be injected, penetrating the tip of the capillary into the membrane, and said substance being injected into the membrane through the capillary.

84. (Withdrawn) An apparatus for perforating a membrane comprising:
a membrane-destroying member for supporting a membrane-denaturing substance that induces a membrane-denaturing reaction by a stimulus; and
a stimulus supply source; and
wherein said stimulus supplied by said supply source is transmitted to said membrane-denaturing substance through said membrane-destroying member, said substance is brought in contact with or close proximity to at least a site of said membrane by said membrane-destroying member, and said stimulus is given to said membrane-denaturing substance so as to perforate said membrane by said membrane-destroying member.

85. (Withdrawn) The apparatus according to claim 53, said stimulus is selected from the group comprising electromagnetic waves including light, particle rays including radiation, heat, cooling, electricity, magnetism, oscillations including ultrasonic waves, physical contact, chemical substances, living beings including cells, viruses, and any combinations thereof.

86. (Withdrawn) The apparatus according to claim 54, wherein said stimulus is light and said substance is a photosensitizer.

87. (Withdrawn) The apparatus according to claim 54, wherein said stimulus is light and said substance is a photocatalyst.

88. (Withdrawn) The apparatus according to claim 54, wherein said stimulus supply is a light source.

89. (Withdrawn) The apparatus according to claim 54, wherein said stimulus supply is an electric power source or heat supply, and wherein said membrane-destroying member comprises a light emitting element, said power or heat is converted into the light stimulus by said light emitting element.

90. (Withdrawn) The apparatus according to claim 53, wherein said membrane-destroying member is a capillary.

91. (Withdrawn) The apparatus according to claim 59, wherein said stimulus is light, said light transmits through the sidewall of said capillary as a light guide.

92. (Withdrawn) The apparatus according to claim 59, wherein said stimulus is light, and wherein at least one optical fiber extends in the length of said capillary, said fiber is provided inside and/or outside of the capillary, a distal end of said fiber extends to the tip of said capillary so as to apply said light to the substance from the end of said fiber.

93. (Withdrawn) A microinjection apparatus comprising the membrane perforating apparatus as claimed in claim 53.

94. (Withdrawn) The microinjection apparatus according to claim 62, wherein said membrane-destroying member is a capillary, and filling the capillary with the substance to be injected, penetrating the tip of the capillary into the membrane, and said substance being injected into the membrane through the capillary.

95. (Withdrawn) The microinjection apparatus according to claim 62, wherein said substance to be injected into said membrane contains a membrane denaturing substance that induces a membrane-denaturing reaction by a stimulus.

96. (Withdrawn) The microinjection apparatus according to claim 62, wherein said stimulus is light and said membrane-denaturing substance is a photosensitizer.

97. (Withdrawn) The microinjection apparatus according to claim 62, wherein said substance to be injected into said membrane is selected from the group comprising, nucleic acids, proteins, lipids, membrane structures, micro machines, and magnetic particles.